

**NORTH CAROLINA DIVISION OF
AIR QUALITY**

Application Review

Issue Date: XX/XX/2018

Region: Fayetteville Regional Office
County: Cumberland
NC Facility ID: 2600058
Inspector's Name: Heather Carter
Date of Last Inspection: 08/29/2018
Compliance Code: 5 / Outstanding Penalty

Facility Data

Applicant (Facility's Name): MANN+HUMMEL Purolator Filters LLC

Facility Address:

MANN+HUMMEL Purolator Filters LLC
 3200 Natal Street
 Fayetteville, NC 28306

SIC: 3714 / Motor Vehicle Parts & Accessories

NAICS: 336399 / All Other Motor Vehicle Parts Manufacturing

Facility Classification: Before: Title V **After:** Title V

Fee Classification: Before: Title V **After:** Title V

Permit Applicability (this application only)

SIP: 15A NCAC 02D .0515, .0516, .0521, .0524, .1100, .1111, .1806, 02Q.0317, 02Q .0501(b)(2), 02Q .0513
NSPS: Subpart IIII
NESHAP: Subparts MMMM, ZZZZ, and DDDDD
PSD: N/A
PSD Avoidance: PSD Avoidance for VOCs
NC Toxics: Model for Formaldehyde and Phenol
112(r): N/A
Other: SOC 2016-003 fulfilled; Schedule of Compliance removed

Contact Data

Application Data

Facility Contact

Authorized Contact

Technical Contact

Bob O'Neill
 HSE Manager
 (910) 426-4299
 3200 Natal Street
 Fayetteville, NC 28306

Regnier Tempels
 Vice President & General
 Manager
 (910) 426-4209
 3200 Natal Street
 Fayetteville, NC 28306

Bob O'Neill
 HSE Manager
 (910) 426-4299
 3200 Natal Street
 Fayetteville, NC 28306

Application Number: 2600058.17C
Date Received: 05/16/2017
Application Type: Renewal/Modification
Application Schedule: TV-Renewal
Existing Permit Data
Existing Permit Number: 01757/T25
Existing Permit Issue Date: 02/21/2018
Existing Permit Expiration Date: 02/28/2018

Total Actual emissions in TONS/YEAR:

CY	SO2	NOX	VOC	CO	PM10	Total HAP	Largest HAP
2016	.0100	3.71	118.20	3.03	20.49	10.94	3.82 [Phenol]
2015	---	4.97	213.67	4.03	8.55	5.95	2.61 [Vinyl acetate]
2014	---	4.28	188.00	3.50	1.41	4.36	1.87 [Vinyl acetate]
2013	---	3.70	160.52	3.03	1.42	4.79	1.83 [Vinyl acetate]
2012	---	3.75	176.64	3.04	1.49	6.45	2.74 [Methanol (methyl alcohol)]

Review Engineer: Joshua L. Harris

Review Engineer's Signature:

Date:

Comments / Recommendations:

Issue 01757/T26
Permit Issue Date: XX/XX/2018
Permit Expiration Date: XX/XX/2023

1. Purpose of Application

MANN+HUMMEL Purolator Filters, LLC, located in Fayetteville, Cumberland County, North Carolina has timely submitted permit Application No. 2600058.17C, requesting renewal of their current air quality permit with several modifications to source descriptions in order to clarify individual sources of emissions. No modifications to install or remove equipment are being requested.

The facility previously operated under Special Order by Consent (SOC) 2016-003, which was issued on December 1, 2016, due to violations of the visible and particulate emission standards. The facility fulfilled the SOC as of April 30, 2018, having complied with all requirements. DAQ issued a letter to the facility on May 5, 2018, stating that the SOC has been fulfilled. Since the SOC is no longer active, the Schedule of Compliance has been removed from the permit.

The contact for this permit application is Regnier Tempels, Vice President & General Manager, (910-426-4209). A consulting firm, Environmental Resources Management, Inc. (ERM), was used for this submittal. The contact at ERM is Christy Richardson, Senior Consultant, (919-855-2283).

2. Facility Description

MANN+HUMMEL Purolator Filters, LLC manufactures automotive oil filters, air filters, and fuel filters for original manufacturers (Toyota, Ford, Chrysler, etc.) and for the aftermarket (Purolator, Penske, etc.). The oil filter manufacturing process is a continuous process that begins with a bulk supply of filter paper on large rolls. The paper is cut to length, pleated and formed into shape. Filters are then baked or “heat set” in a continuous oven to cure the paper. Filters are then placed in metal cans and plastisol or polyurethane is used as an adhesive to hold the filter to the end caps. The adhesive materials then may be sealed or cured in a final cure oven.

Once the filters are cured, they go through automated dry powder spray booths for final finish. Fuel filters and air filters are produced in a similar method as the oil filters, including heat set and final cure steps, but using a different paper material. Air filters are formed into cylindrical shapes or rectangular shapes and are set into frames constructed of polyurethane or plastisol. In addition to processing the filter paper, Purolator creates the steel cans and end caps for its oil filters, which are produced by a series of hydraulic presses, and are sent through natural gas-fired washers and dryers. Fugitive VOC emissions occur from the inks used to label the filters, paint used for touch-up applications and from the miscellaneous use of adhesives and clean-up solvents.

3. Application Chronology

- 05/16/17 Application No. 2600058.17C for renewal with modifications was received by the Raleigh Central Office (RCO), and a copy was forwarded to the Fayetteville Regional Office (FRO). Appeared complete with the exception of the required permit modification application fee. The application was considered incomplete for processing.
- 05/19/17 RCO sent the facility a letter acknowledging receipt of the permit application. The letter informed the facility that the permit application was considered incomplete, and requested the facility submit the \$929 permit modification fee.
- 05/23/17 RCO received the required permit application fee.
- 01/31/18 Permit Renewal Application No. 2600058.17C was reassigned from Yuki Puram to Joshua Harris.
- 02/21/18 Permit revision 01757T25 issued to the facility for a minor modification (Application No. 2600058.17D).
- 03/13/18 Joshua Harris, RCO DAQ, sent an email to Mr. Regnier Tempels, Vice President and General Manager, requesting clarification on some of the changes the facility requested to emission sources as listed in the application.
- 03/19/18 Joshua Harris received an email response from Mr. Regnier Tempels confirming the facility's intent to move ESCBA to the insignificant activities list, and verifying that there are indeed four mold release operations, one each for ESAL4 and ESPCELL1-3. Additionally, Mr. Tempels stated that he is not opposed to keeping the boiler (ID No. IS-B1) as an insignificant activity, though the initial request was to permit the boiler due solely to the fact that is subject to MACT Subpart DDDDD. Mr. Harris sent a follow-up email confirming receipt of Mr. Tempels' message.
- 04/06/18 Joshua Harris sent Christy Richardson, Senior Consultant, an email with questions regarding particulate matter emissions calculations from various sources at the facility. Mr. Harris expressed concerns about using emission factors from testing on the oil lines to estimate emissions from the facility's air and fuel filter manufacturing lines, and stated that doing so would mean these production lines may exceed the particulate emission limits of 15A NCAC 02D .0515. Mr. Harris requested additional information regarding particulate emissions from the fuel and air filter lines.
- 04/10/18 Joshua Harris received an email from Regnier Tempels regarding particulate emissions estimations at the facility. Mr. Tempels stated that, in a letter dated October 27, 2016, DAQ required the facility to apply the factors from testing on ESOL3 to all paper curing ovens. Mr. Tempels did not include any additional information specifically regarding particulate emissions from the air and fuel filter manufacturing lines.
- 04/12/18 Joshua Harris responded to Regnier Tempels' email reiterating the concerns over the particulate matter emissions, and requested additional information regarding particulate emissions and emission factors from the curing ovens at the facility's fuel and air filter production lines.

- 04/25/18 Joshua Harris received an email from Bob O'Neill, who provided an update on the status of Mr. Harris' request. Mr. O'Neill apologized for the length of time being taken, and stated that the facility was actively searching for the requested information.
- 05/04/18 FRO issued a letter to the facility stating that all conditions of SOC 2016-003 have been completed.
- 06/19/18 Joshua Harris sent an email to Bob O'Neill regarding the status of the request for emission factors for the fuel and air filter lines. Additionally, Mr. Harris asked about the status of ESCART1. Mr. O'Neill requested a conference with DAQ.
- 07/12/18 A meeting was held at the facility. In attendance were Regnier Tempels, Bob O'Neill, Christy Richardson, Heather Carter, and Joshua Harris. Mr. O'Neill showed Ms. Carter and Mr. Harris the facility's electronic data logger for monitoring temperature for the RTOs, he also stated that the RTOs, except for CDOL4-c are interlocked such that if their temperatures fall below the setpoint, currently 1,115°F, the associated paper pleater shuts down. Mr. O'Neill also discussed a possible request for the visible emissions monitoring to be relaxed since the RTOs have been installed and have proven effective at essentially elimination visible emissions. Ms. Carter recommended that he make a proposal for changes to the monitoring frequency so DAQ can evaluate the request for possible inclusion in the air quality permit.

Mr. O'Neill also addressed some of the questions posed previously. Mr. O'Neill stated that he expects to be submitting a response in about one week and will include emission factors for the fuel and air filter lines, which are still being researched. He also stated that ESCART1 is not operating, and Mr. Tempels stated that the line may be used in the future for another application, so he would like it to remain on the permit as it currently is.

There was also a discussion regarding specification of a minimum operating temperature for the RTOs being placed in the permit, and that the permit limit would be based on RTO temperatures during testing. Mr. Harris followed-up that discussion with an email to clarify how that temperature would be determined, i.e. the "highest 3-hour average operating temperature during testing."

- 07/23/18 Joshua Harris received an email from Bob O'Neill stating that he had received a number of responses from around the world to his queries for information, and that the facility is in the process of translating the information and assembling a response.
- 08/06/18 Joshua Harris sent Bob O'Neill an email checking the status of the facility's response.
- 08/08/18 Joshua Harris received an email from Bob O'Neill with the facility's response to various questions asked and points brought up during the July 12, 2018 meeting. The response included an analysis by which the facility determined an emission factor for particulates from the air filter line heat set ovens, and a request to relax the visible emission monitoring frequencies for the facility's various emission points. Since the facility was unable to determine a particulate emission factor for the fuel filter line heat setting oven, source testing of ESGL1-a was proposed within 120 days of permit issuance to demonstrate compliance. Mr. Harris replied, confirming receipt of the facility's response.

- 08/09/18 Heather Carter, DAQ FRO, sent Joshua Harris an email with comments on the facility's response. Ms. Carter agreed with the facility's proposals and recommended that the facility be granted a monthly monitoring frequency for visible emissions for all sources.
- 08/16/18 Joshua Harris sent electronic copies of the draft permit and review documents to Booker Pullen, RCO DAQ, and to Heather Carter and Greg Reeves, both of FRO DAQ for comments.
- 08/24/18 Booker Pullen responded with minor editorial comments on the permit review.
- 09/04/18 FRO responded with no comments.
- 09/04/18 Joshua Harris sent electronic copies of the draft permit and review documents to Regnier Tempels, Bob O'Neill, and Christy Richardson for comments.
- 09/20/18 Joshua Harris sent an email to Regnier Tempels regarding the request for comments on the draft documents and allowed more time for those comments to be submitted due to the impacts of Hurricane Florence.
- 09/25/18 Joshua Harris, Heather Carter, Bob O'Neill, and Christy Richardson had a conversation regarding the facility's questions on RTO temperature parameters and the process for re-establishing the temperature through testing as written in Section 2.1 A.1.e. Ms. Carter explained that the temperature used in the permit condition is based on the temperature established during the most recent testing event. Mr. Harris agreed to determine the current procedure for re-establishing monitoring values and follow-up.
- 09/26/18 Joshua Harris sent an email to Bob O'Neill and Christy Richardson regarding the process for re-establishing monitoring values. Mr. Harris' email included an updated permit condition which states that the facility shall include an application for an administrative amendment with the submittal of the test results of testing undertaken to re-establish monitoring parameters.
- 09/27/18 Joshua Harris received an email from Bob O'Neill who stated that the updated permit condition sent the previous day was acceptable, and that there were no additional comments from the facility.
- Xx/xx/18 30-day public notice and 45-day EPA review periods begin.
- Xx/xx/18 Public notice period ends.
- Xx/xx/18 EPA review period ends.
- Xx/xx/18 Air Quality Permit No. 01757T26 issued.

4. Table of Changes to Existing Permit No. 01757T25

Page No(s).	Section(s)	Description of Changes
Global	Global	<ul style="list-style-type: none"> • Changed the application number and complete date. • Changed permit revision number to T26. • Changed the issuance/effective dates of the permit. • Standardized numbering format throughout.
Cover Letter	Cover Letter	<ul style="list-style-type: none"> • Updated PSD increment tracking statement.
Attachment	Attachment	<ul style="list-style-type: none"> • Added pocket pleat line and case bottom assembly as insignificant sources (ID Nos. IS-PPLT1 and IS-CBA). • Added note to indicate ID No. IS-B1 is subject to MACT DDDDD. • Marked sources which were used in the toxics demonstration as indicated in Note 2.
3-6	1	<ul style="list-style-type: none"> • Removed table notes for CDOL4-c being part of a minor permit modification, and for toxics applicability to marked sources since those notes are no longer applicable. • Removed sources ESPPLT1 and ESCBA since they have been moved to the insignificant/exempt activities list.
7	2.1 A. (table)	<ul style="list-style-type: none"> • Removed references to ESPPLT1 and ESCBA.
8-9	2.1 A.1.a. 2.1 A.1.b. 2.1A.1.e. 2.1A.1.f. 2.1A.1.j.	<ul style="list-style-type: none"> • Removed testing requirement to test RTO, since this testing has been conducted, and the report submitted. • Removed reference to testing required by Special Order by Consent (SOC) No. 2016-003, since this testing has been completed, and the SOC is no longer active. • Inserted a condition to conduct source testing on fuel filter line heat setting oven (ID No. ESGL1-a) within 120 days of permit issuance. • Removed references to ESPPLT1 and ESCBA. • Included specific minimum average operating temperature of the RTOs as 1,126°F based on recent testing. • Specified a 3-hour <i>rolling</i> average throughout for the minimum average operating temperature of the RTOs. • Added conditions to allow the Permittee to re-establish operating parameters for the RTOs through source testing. • Re-worded condition requiring RTOs to be operated when their associated emission sources are operating and processing paper or filters.
10	2.1 A.3.d.	<ul style="list-style-type: none"> • Changed monitoring frequency to monthly for all subject sources. • Removed allowance for missed observations. • Removed requirement to establish new “normal” for oil lines since this has been met.
13	2.1 A.4.c.v.	Corrected cross-reference for R _w .
17	2.1 A.5	Corrected citation to 15A NCAC 02Q .0501(b)(2).
19	2.1 C. (table)	Updated standards in table for ES-EG1 to show that there are no applicable requirements, and removed compliance date noted for ES-EG2 since this date has already passed.
21	2.1 C.4.a.	Updated requirements and regulatory citation for ES-EG1, which was previously treated as a “new” rather than an “existing” emergency generator.
22	2.1 C.4.r.v.	Corrected cross-reference to Permit Section 2.1 C.4.i.

Page No(s).	Section(s)	Description of Changes
24	2.2 A.1.a.	<ul style="list-style-type: none"> Removed MEK since facility-wide MEK emissions no longer exceed the toxic permitting emission rate (TPER). Changed date of demonstration for formaldehyde and phenol. Updated emission limits for formaldehyde and phenol based on most recent compliance demonstration.
-----	2.3	Removed Section 2.3 "Schedule of Compliance," since the facility has completed all requirements of SOC No. 2016-003, and the SOC is no longer active.
26	3	Updated the General Conditions to the most recent version (version 5.3)

5. Changes in Equipment

The facility has not requested physical changes to any sources, but has requested several changes to source descriptions, many of which were part of a previous application for a Significant Modification (Application No. 2600058.17B), and has also requested to move sources between the insignificant activities and permitted equipment lists. Some of the changes listed in the renewal application were previously incorporated into the facility's permit when revision T24 was issued on September 7, 2017. The requested modifications unique to the current renewal/modification application are as follows:

- The facility requests that the mold release spray operations (ID No. IS-MR1) be removed from the insignificant list, and included as individual sources with their respective filter lines. This is discussed in more detail for each affected line below.
- The facility requests to add a group of natural gas-fired heating units, totaling 11.7 mmBtu/hr, used for comfort heat to the insignificant activities list as ID No. IS-COMB.
 - ✓ 15A NCAC 2Q .0503(7)(d) lists heating units used for human comfort heat that have a heat input of less than 10,000,000 Btu per hour and that do not provide heat for any manufacturing or other industrial process as "insignificant activities because of category." Though the total heat input for the group of heaters exceeds the maximum allowable heat input per the definition, individually, the heaters will meet the definition of insignificant activities because of category. Therefore, a group of miscellaneous natural gas-fired combustion sources for comfort heat (total of 11.7 million Btu per hour) has been added to the facility's insignificant activities list as ID No. IS-COMB.
- The facility requests to have the pocket pleat line (ID No. ESPPLT1) and case bottom assembly (ID No. ESCBA) moved to the insignificant activities list, on the basis that ESPPLT1 does not generate emissions and does not vent to the outside atmosphere.
 - ✓ ESCBA used to be a major contributor of VOC emissions at the facility, mostly in the form of MEK, and was included in previous toxics models. The facility last reported emissions for ESCBA on the CY2008 Air Quality Emission Inventory (AQEI), which consisted of 10.5 tons of VOC emissions as MEK, but has since made a formulation change to a more environmentally friendly adhesive. For the years following the formulation change, no emissions have been reported from this source.

- ✓ ESPPLT1 was initially added to the facility's permit in December 2012 as part of the 2600058.12A application for a significant modification. The facility requested then that the source be listed as an insignificant activity at the time, and provided emissions calculations based on testing conducted at the facility in May 1995. Those emissions calculations showed that the source's uncontrolled potential emissions of particulates, sulfur dioxide, nitrogen oxides, volatile organic compounds, and carbon monoxide are each less than five tons per year, and potential HAP emissions from the source are less than 1,000 pounds per year. The source was placed on the permitted equipment list due to the fact that it was included in the facility's toxic modeling analysis, and a note was added stating that the source was only subject to state toxics.

The current application states that this source does not generate emissions, again however, it was initially included in the toxics demonstration for formaldehyde and phenol, and these pollutants, as well as particulate and VOC emissions have been reported for this source in the facility's annual AQEI. Toxic emissions from this source were not included in the most recent modeling analysis, but the methodology used in that analysis overestimated facility-wide formaldehyde and phenol emissions, which would sufficiently cover the small amount of toxic emissions from this source. The insignificant activities list has a note

- ✓ ESPPLT1 and ESCBA both appear to meet the 15A NCAC 02Q .0503(8) definition of "insignificant activities because of size or production rate." Both sources individually have the potential to emit less than 1,000 pounds of HAP per year, and have uncontrolled potential to emit less than five tons of particulate, sulfur dioxide, nitrogen oxides, volatile organic compounds, and carbon monoxide each per year. These sources have been removed from the permitted equipment list and placed on the facility's insignificant list in the attachment to the permit as ID Nos. IS-PPLT1 and IS-CBA.
- The facility requests to have fuel filter line ESGL1 split into three separate permitted sources: one electric infrared heat set oven (ID No. ESGL1-a), one 0.75 mmBtu/hr natural gas-fired pre-gel plastisol curing oven (ID No. ESGL1-b), and one 1.5 mmBtu/hr natural gas-fired plastisol final cure oven (ID No. ESGL1-c).
- ✓ ESGL1 has been split into three sources, ID Nos. ESGL1-a, b and c, as described above.
- The facility requests to have conical air filter line ESAL4 split into three separate permitted sources: one 0.14 mmBtu/hr natural gas-fired Zimmer oven for conical filter line (ID No. ESAL4-a), one 2.0 mmBtu/hr natural gas-fired heat set oven for conical filter line (ID No. ESAL4-b), one 0.7 mmBtu/hr natural gas-fired polyurethane cure oven (ID No. ESAL4-c). Additionally, the facility has requested that the mold release spray operation (ID No. IS-MR1) be moved from the insignificant activities list, and included with the ESAL4 source group as ID No. ESAL4-d.
- ✓ ESAL4 and IS-MR1 have been split into four sources, ESAL4-a, b, c and d, as described above.

- The facility requests to have panel air filter line ESAL5 split into two separate sources: one electric heat roller for panel filter line (ID No. ESAL5-a), and one electric infrared plastisol cure oven (ID No. ESAL5-b).
 - ✓ ESAL5 has been split into two sources, ESAL5-a and b, as described above.
- The facility requests to have poly panel air cell production line ESPCELL1 split into three separate permitted sources: one 0.3 mmBtu/hr natural gas-fired Steelman oven (ID No. ESPCELL1-a), one 2.0 mmBtu/hr natural gas-fired heat set oven (ID No. ESPCELL1-b), and one polyurethane dispensing operation (ID No. ESPCELL1-c). Additionally, the facility has requested that the mold release spray operation (ID No. IS-MR1) be removed from the insignificant activities list, and included with the ESPCELL1 source group as ID No. ESPCELL1-d.
 - ✓ ESPCELL1 and IS-MR1 have been split into four sources, ESPCELL1-a, b, c and d, as described above.
- The facility requests to have poly panel air cell production line ESPCELL2 split into three separate permitted sources: one 0.25 mmBtu/hr natural gas-fired Steelman oven (ID No. ESPCELL2-a), one 1.6 mmBtu/hr natural gas-fired heat set oven (ID No. ESPCELL2-b), and one polyurethane dispensing operation (ID No. ESPCELL2-c). Additionally, the facility has requested that the mold release spray operation (ID No. IS-MR1) be removed from the insignificant activities list, and included with the ESPCELL2 source group as ID No. ESPCELL2-d.
 - ✓ ESPCELL2 and IS-MR1 have been split into four sources, ESPCELL2-a, b, c and d, as described above.
- The facility requests to have polyurethane panel air cell production line ESPCELL3 split into three separate permitted sources: one 0.3 mmBtu/hr natural gas-fired Steelman oven (ID No. ESPCELL3-a), one 1.5 mmBtu/hr natural gas-fired heat set oven (ID No. ESPCELL3-b), and one polyurethane dispensing operation (ID No. ESPCELL3-c). Additionally, the facility has requested that the mold release spray operation (ID No. IS-MR1) be removed from the insignificant activities list, and included with the ESPCELL1 source group as ID No. ESPCELL3-d.
 - ✓ ESPCELL3 and IS-MR1 have been split into four sources, ESPCELL3-a, b, c and d, as described above.

Title V Equipment Editor (TVEE) has been updated for the modifications listed above.

The facility's permitted emission sources are as follows:

Emission Source ID	Emission Source Description	Control Device ID	Control Device Description
OIL FILTER MANUFACTURING OPERATIONS			
ESOL2 MACT MMMM	One oil filter line (9,600 units per hour design capacity) with one natural gas- fired heat set oven, one top cap electric induction oven, one bottom cap electric induction oven and powder coating paint spray booth (IES-2)		
ESOL2-a	One 1.6 million Btu per hour natural gas-fired heat set oven	CDOL2	One natural gas-fired recuperative thermal oxidizer (5.0 million Btu per hour heat input capacity)
ESOL2-b	One top cap electric induction plastisol curing oven	N/A	N/A
ESOL2-c	One bottom cap electric induction plastisol curing oven	N/A	N/A
ESOL3 MACT MMMM	One oil filter line (9,600 units per hour design capacity) with one natural gas- fired heat set oven, one electric top cap induction oven, one electric induction bottom cap oven and one powder coating paint spray booth (IES-3)		
ESOL3-a	One 1.5 million Btu per hour natural gas-fired heat set oven	CDOL3	One natural gas-fired recuperative thermal oxidizer (5.0 million Btu per hour heat input capacity)
ESOL3-b	One top cap electric induction plastisol curing oven	N/A	N/A
ESOL3-c	One bottom cap electric induction plastisol curing oven	N/A	N/A
ESOL4 MACT MMMM	One oil filter line (9,600 units per hour design capacity) with two natural gas- fired heat set ovens, one electric pre-gel oven, one natural gas-fired final cure oven and one powder coating paint spray booth (IES-4)		
ESOL4-a	One 1.5 million Btu per hour natural gas-fired heat set oven	CDOL4-a	One natural gas-fired recuperative thermal oxidizer (5.0 million Btu per hour heat input capacity)
ESOL4-b	One 1.5 million Btu per hour natural gas-fired heat set oven	CDOL4-b	One natural gas-fired recuperative thermal oxidizer (5.0 million Btu per hour heat input capacity)
ESOL4-c	One electric infrared pre-gel plastisol curing oven	CDOL4-c	One natural gas-fired recuperative thermal oxidizer (5.0 million Btu per hour heat input capacity)
ESOL4-d	One 1.2 million Btu per hour natural gas-fired plastisol final cure oven		

Emission Source ID	Emission Source Description	Control Device ID	Control Device Description
ESOL5 MACT MMMM	One oil filter line (9,600 units per hour design capacity) with two natural gas- fired heat set ovens, one top cap electric induction oven, one bottom cap electric induction oven and one powder coating paint spray booth (IES-5)		
ESOL5-a	One 0.75 million Btu per hour natural gas-fired heat set oven	CDOL5-a	One natural gas-fired recuperative thermal oxidizer (5.0 million Btu per hour heat input capacity)
ESOL5-b	One 1.5 million Btu per hour natural gas-fired heat set oven	CDOL5-b	One natural gas-fired recuperative thermal oxidizer (5.0 million Btu per hour heat input capacity)
ESOL5-c	One top cap electric induction plastisol curing oven	N/A	N/A
ESOL5-d	One bottom cap electric induction plastisol curing oven	N/A	N/A
ESOL7 MACT MMMM	One oil filter line (9,600 units per hour design capacity) with one natural gas-fired heat set oven, one top cap electric induction oven, one bottom cap electric induction oven and one powder coating paint spray booth (IES-7)		
ESOL7-a	One 2.0 million Btu per hour natural gas-fired heat set oven	CDOL7	One natural gas-fired recuperative thermal oxidizer (5.0 million Btu per hour heat input capacity)
ESOL7-b	One top cap electric induction plastisol curing oven	N/A	N/A
ESOL7-c	One bottom cap electric induction plastisol curing oven	N/A	N/A
ESOL8 MACT MMMM	One oil filter line (4,200 units per hour design capacity) with one natural gas-fired heat set oven and one powder coating paint spray booth (IES-8)		
ESOL8-a	One 1.6 million Btu per hour natural gas-fired heat set oven	CDOL8	One natural gas-fired recuperative thermal oxidizer (5.0 million Btu per hour heat input capacity)
ESOL8-b	One polyurethane dispensing operation	N/A	N/A
ESCART1	One oil cartridge filter line (3,900 units per hour design capacity) with one electric heat set oven		
ESCART1-a	One electric heat set oven for cartridge filter line	CDOL2	One natural gas-fired recuperative thermal oxidizer (5.0 million Btu per hour heat input capacity)
ESCART1-b	One polyurethane dispensing operation	N/A	N/A
ESOLDC	One paper dust collection system with collection points on ESOL2 and ESOL3	CDOLDC	One bagfilter (1,310 square feet of filter area)

Emission Source ID	Emission Source Description	Control Device ID	Control Device Description
FUEL FILTER MANUFACTURING OPERATIONS			
ESGL1	One fuel filter line (3,600 units per hour design capacity) with one electric heat set oven, two natural gas-fired ovens		
ESGL1-a	One electric infrared heat set oven	N/A	N/A
ESGL1-b	One 0.75 million Btu per hour natural gas-fired pre-gel plastisol curing oven	N/A	N/A
ESGL1-c	One 1.5 million Btu per hour natural gas-fired plastisol final cure oven	N/A	N/A
AIR FILTER MANUFACTURING OPERATIONS			
ESAL4	One polyurethane conical air filter line (960 units per hour design capacity) with three natural gas-fired ovens and one mold release spray operation		
ESAL4-a	One 0.14 million Btu per hour natural gas-fired Zimmer oven	N/A	N/A
ESAL4-b	One 2.0 million Btu per hour natural gas-fired heat set oven	N/A	N/A
ESAL4-c	One 0.7 million Btu per hour natural gas-fired polyurethane cure oven	N/A	N/A
ESAL4-d	Mold release spray operation	N/A	N/A
ESAL5	One Plastisol panel air filter line (3,000 units per hour design capacity) with one electric heat roller and one electric infrared cure oven		
ESAL5-a	One electric heat roller for panel filter line	N/A	N/A
ESAL5-b	One electric infrared plastisol cure oven	N/A	N/A
ESPCELL1	Poly panel air filter production line (960 units per hour design capacity) with two natural gas-fired ovens, one polyurethane dispensing operation and one mold release spray operation		
ESPCELL1-a	One 0.3 million Btu per hour natural gas-fired Steelman oven	N/A	N/A
ESPCELL1-b	One 2.0 million Btu per hour natural gas-fired heat set oven	N/A	N/A
ESPCELL1-c	One polyurethane dispensing operation	N/A	N/A
ESPCELL1-d	Mold release spray operation	N/A	N/A
ESPCELL2	Poly panel air filter production line (960 units per hour design capacity) with two natural gas-fired ovens, one polyurethane dispensing operation and one mold release spray operation		
ESPCELL2-a	One 0.25 million Btu per hour natural gas-fired Steelman oven	N/A	N/A
ESPCELL2-b	One 1.6 million Btu per hour natural gas-fired heat set oven	N/A	N/A

Emission Source ID	Emission Source Description	Control Device ID	Control Device Description
ESPCELL2-c	One polyurethane dispensing operation	N/A	N/A
ESPCELL2-d	Mold release spray operation	N/A	N/A
ESPCELL3	Polyurethane panel air filter production line (960 units per hour design capacity) with two natural gas-fired ovens, one polyurethane dispensing operation and one mold release spray operation		
ESPCELL3-a	One 0.3 million Btu per hour natural gas-fired Steelman oven	N/A	N/A
ESPCELL3-b	One 1.5 million Bu per hour natural gas-fired heat set oven	N/A	N/A
ESPCELL3-c	One polyurethane dispensing operation	N/A	N/A
ESPCELL3-d	Mold release spray operation	N/A	N/A
EMERGENCY ENGINES			
ES-FP1 NSPS IIII MACT ZZZZ	One diesel-fueled fire pump (260 kW (350 hp) capacity) with an exhaust filter	N/A	N/A
ES-EG1 MACT ZZZZ	One diesel-fired emergency generator (740 kW (1006 hp) capacity)	N/A	N/A
ES-EG2 MACT ZZZZ	One diesel-fired emergency generator (60 kW (96 hp) capacity)	N/A	N/A

The facility's insignificant/exempt activities are as follows:

Emission Source ID No.	Emission Source Description
IS-CAL	One cabin air filter line
IS-B1 MACT DDDDD	One natural gas-fired boiler (2.0 million Btu per hour heat input capacity)
IES-2 MACT MMMM	One powder coating spray booth for oil filter line 2
IES-3 MACT MMMM	One powder coating spray booth for oil filter line 3
IES-4 MACT MMMM	One powder coating spray booth for oil filter line 4
IES-5 MACT MMMM	One powder coating spray booth for oil filter line 5
IES-7 MACT MMMM	One powder coating spray booth for oil filter line 7
IES-8 MACT MMMM	One powder coating spray booth for oil filter line 8
IS-SM	Sheetmetal Operation
IS-MISC	Miscellaneous Emissions
IBB-1	Bead Blasting Process
IS-BO	Four burn-off ovens (total of 1.8 million Btu per hour)
IS-WD	Seven metal parts washers/dryers (total of 13 million Btu per hour)
IS-COMB	Miscellaneous natural gas-fired combustion sources for comfort heat (total of 11.7 million Btu per hour)
IS-PPLT1	Pocket Pleat Line
IS-CBA	Case Bottom Assembly

6. NSPS, NESHAP, PSD, 112(r), CAM & Attainment Status

- **NSPS –**
 - ✓ The diesel-fired fire pump (ID No. ES-FP1) is subject to 40 CFR 60, Subpart IIII “Stationary Compression Ignition Internal Combustion Engines” because the engine was constructed after July 11, 2005.
 - ✓ The natural gas-fired boiler (ID No. IS-B1) is NOT subject to 40 CFR 60, Subpart Dc “Small Industrial-Commercial-Institutional Steam Generating Units,” since its maximum heat input is less than 10 mmBtu/hr.
- **NESHAP –**
 - ✓ The coating operations associated with the facility’s oil filter lines (ID Nos. ESOL2 through ESOL5, ESOL7, ESOL8) are subject to 40 CFR 63, Subpart MMMM “Surface Coating for Miscellaneous Metal Parts and Products” since the facility is a major source of HAP which engages in surface coating of motor vehicle parts and uses more than 250 gallons of HAP-containing coatings per year on these lines.

- ✓ The natural gas-fired boiler (ID No. IS-B1) is subject to 40 CFR 63, Subpart DDDDD “Industrial, Commercial, and Institutional Boilers and Process Heaters” since the facility is a major source of HAP and does not meet any of the exemption criteria of 40 CFR §63.7491. The Initial Notification was received at FRO on July 31, 2014, the one-time Energy Assessment was completed on April 17, 2015, and the initial tune-up was completed on July 14, 2015.
- ✓ The diesel-fired emergency generators (ID No. ES-EG1 and ES-EG2) are subject to 40 CFR 63, Subpart ZZZZ “Reciprocating Internal Combustion Engines” and are considered existing emergency engines under this regulation.
- ✓ The diesel-fired fire pump (ID No. ES-FP1) is subject to 40 CFR 63, Subpart ZZZZ “Reciprocating Internal Combustion Engines” and is considered a new emergency engine under this regulation. The facility complies with NESHAP Subpart ZZZZ for this source by complying with NSPS Subpart III.
- **PSD** – The facility’s potential VOC emissions exceed PSD permitting thresholds. The facility has accepted an emissions limitation of 250 TPY for VOCs to avoid PSD permitting, and the permit contains a 15A NCAC 02Q .0317 PSD Avoidance condition.
 - ✓ Cumberland County has triggered increment tracking under PSD for PM₁₀ and SO₂. This permitting action is expected to neither expand nor consume any increments.
- **112(r)** – The facility does not store any of the listed 112(r) chemicals in amounts that exceed the threshold quantities. Therefore, the facility is not required to maintain a written Risk Management Plan (RMP).
- **CAM** – The facility’s control devices controlling particulate matter emissions are the only control devices required to achieve compliance with an emission standard. Particulate emissions from each controlled emission source are below 100 tons per year. Therefore, CAM does not apply.
- **Attainment status** – Cumberland County is in attainment for all criteria pollutants.

7. Regulatory Review

The facility is subject to the following air quality regulations in addition to the General Conditions:

- 15A NCAC 02D .0515: Particulates from Miscellaneous Industrial Processes
- 15A NCAC 02D .0516: Sulfur Dioxide Emissions from Combustion Sources
- 15A NCAC 02D .0521: Control of Visible Emissions
- 15A NCAC 02D .0524: New Source Performance Standards, Subpart IIII
- 15A NCAC 02D .1100: Control of Toxic Air Pollutants
- 15A NCAC 02D .1111: Maximum Achievable Control Technology, Subpart MMMM
- 15A NCAC 02D .1111: Maximum Achievable Control Technology, Subpart ZZZZ
- 15A NCAC 02D .1111: Maximum Achievable Control Technology, Subpart DDDDD
- 15A NCAC 02D .1806: Control and Prohibition of Odorous Emissions
- 15A NCAC 02Q .0317: Avoidance Condition for Prevention of Significant Deterioration
- 15A NCAC 02Q .0501(b)(2): Permit Application Submittal Requirement

The following permit condition has been eliminated as part of this permit action:

- Schedule of Compliance, SOC 2016-003

15A NCAC 02D .0515: Particulates from Miscellaneous Industrial Processes

Subject sources are the oil filter lines (ESOL2 through ESOL5, ESOL7, ESOL8 and ESCART1), fuel filter line (ESGL1), air filter lines (ESAL4, ESAL5, and ESAL6), and poly panel air filter lines (ESPCELL1, ESPCELL2, and ESPCELL3), and paper dust collection system (ESOLDC).

The particulate emission limits are determined using the following equation based on the individual process weight rates for each source.

$$E = 4.10 \times P^{0.67} \text{ for } P \leq 30 \text{ tons per hour}$$

Where: E = allowable emission rate in pound per hour
P = process weight rate in tons per hour

Compliance with the calculated emission limits is expected from the affected sources; see the table below. MANN+HUMMEL complies with the 02D .0515 standards by controlling particulate emissions from the paper dust collection system (ID No. ESOLDC) with a bagfilter (ID No. CDOLDC). The facility performs routine inspection and maintenance on the bagfilter as recommended by the manufacturer, a monthly external inspection of the ductwork and bagfilter noting the structural integrity, and an annual internal inspection of the bagfilter noting the structural integrity and the condition of the filter. Compliance is indicated.

As required by SOC 2016-003, source testing was conducted on CDOL7 on November 16-17, 2017, and a second test was conducted on CDOL8 on June 21, 2018 as required by the 02D .0515 permit condition. Compliance was demonstrated for particulate emissions from CDOL7 while the heat set oven was processing two different papers with different initial cure percentages; paper is partially cured before heat setting occurs, and heat setting acts as a final cure. The results of the CDOL8 testing are under review by the Stationary Sources Compliance Branch (SSCB), but preliminary indications are that compliance is indicated. The two filter papers tested were chosen because one is the most used filter media, “346” paper, and one is the most emissive filter media, “099” paper.

CDOL7 was operating at an average temperature of 1,112°F while testing “346” paper, at 1,101°F for “099” paper. CDOL8 was operating at an average temperature of 1,126°F for both “099” and “346” papers during all of its test runs. The FRO issued a letter to the facility on April 23, 2018 after the review of the testing of CDOL7 was completed. The letter stated that since two different filter media were tested at two different operating rates, the Division considers the highest 3-hour average operating temperature during testing to be the established minimum set by testing for all filter media for all RTOs.

The permit condition will include a temperature requirement for all RTOs to be operated at or above 1,126°F on a 3-hour rolling basis, based on testing. The facility’s RTOs and their associated sources are interlocked such that the controlled lines are automatically shut down in the event that the RTO temperature falls below a specified temperature, which the facility sets to provide a margin of compliance. The facility may re-establish operating parameters through subsequent testing, during which the operating parameter in the permit will not apply, however, emission limitations shall apply at all times, including during testing undertaken by the Permittee to re-establish operating parameters. Compliance is expected.

Emissions from heat setting for the air filter lines (ID Nos. ESAL4-b, ESPCELL1-b, ESPCELL2-b, and ESPCELL3-b) and the fuel filter line (ID No. ESGL1-a), when based on the emission factors derived from heat setting on the oil lines, appeared to exceed the calculated particulate limit. At the request of DAQ, the facility conducted further research and provided a composite emission factor for particulate matter for the air filter lines. Bench scale testing was previously performed by the manufacturer of the paper used for the air filter lines to determine VOC emission rates under the conditions which were at slightly higher temperatures, and longer residence times than those used in the facility’s heat setting ovens, which would result in a conservatively high estimate. To determine the particulate emission factor, the facility assumed that all VOCs emitted condense to form particulates. Since there were no data for filterable particulates from the air filter lines, the facility assumed the same emission factor as the one developed during testing of the oil filter line, ESOL3 in 2015.

Using these data, the facility arrived at an emission factor for total particulate emissions of 4.7 pounds of PM per ton of paper processed. DAQ accepts this method of determining particulate emission for these sources, and the table above shows that the air filter lines will be in compliance with the calculated emission limit assuming the facility continues to use the analyzed filter media. Should the facility switch to a more emissive filter media, a similar analysis or possibly source testing will be required to demonstrate compliance.

The facility was unable to determine an emission factor for the fuel filter lines, and proposed to conduct source testing within 120 days of permit issuance. DAQ accepts this proposal, and a testing condition is being placed in the permit requiring the facility to demonstrate compliance with the calculated 02D .0515 particulate limit within 120 days of issuance. If the results of this testing do not demonstrate compliance, the FRO may require follow-up testing of the air filter lines to validate the facility's assumptions discussed above. Compliance is expected.

Source	Control Device	Process ⁽¹⁾ Rate (tons/hr)	02D .0515 Limit (lb/hr)	Uncontrolled ⁽²⁾ PM (lb/hr)	Control Efficiency ⁽³⁾	Controlled PM (lb/hr)	Compliance Indicated?
ESOL2-a	CDOL2	0.53	2.67	4.96	65%	1.74	YES
ESOL3-a	CDOL3	0.30	1.85	2.86	65%	1.00	YES
ESOL4-a/b	CDOL4-a/b	0.30	1.85	2.86	65%	1.00	YES
ESOL4-c	CDOL4-c	0.30	1.85	2.86	65%	1.00	YES
ESOL4-d		0.30	1.85	0.03	65%	0.01	YES
ESOL5-a/b	CDOL5-a/b	0.30	1.85	2.86	65%	1.00	YES
ESOL7-a	CDOL7	0.53	2.67	4.96	65%	1.74	YES
ESOL8-a	CDOL8	0.45	2.40	4.22	65%	1.48	YES
ESCART1-a	CDOL2	0.14	1.11	1.34	65%	0.47	YES
ESOLDC	CDOLDC	0.6 ⁽⁴⁾	2.91	15.86	98%	0.32	YES
ESGL1-a	N/A	0.11	0.93	Test within 120 days of issuance of permit no. 01757T26			
ESAL4-b		0.14	1.12	0.68	0%	0.68	YES
ESPCELL1-b		0.18	1.31	0.85	0%	0.85	YES
ESPCELL2-b		0.18	1.31	0.85	0%	0.85	YES
ESPCELL3-b		0.18	1.31	0.86	0%	0.86	YES

1. The process rate is based upon the maximum capacity of each line, and assumes that the largest filters possible are being manufactured. These values were provided by the facility within the permit application.
2. Uncontrolled PM emission rates for heat setting on the oil filter lines are based on testing conducted in July and December 2015.
3. The control efficiencies for the RTOs were provided by the manufacturer.
4. ESOLDC process rate was determined in previous permit reviews; see review for revision T19. PM emission rates and control efficiency are from the permit application.

15A NCAC 02D .0516: Sulfur Dioxide Emissions from Combustion Sources

Subject sources are the facility's combustion sources. The sulfur dioxide (SO₂) emission limit for each combustion source is 2.3 pounds per million Btu heat input. No monitoring, recordkeeping, or reporting is required from firing natural gas or diesel fuel in these sources, as combustion of these fuels results in inherently low SO₂ emissions. The SO₂ emission factor for is 0.006 lb/mmBtu heat input for natural gas combustion, and 0.51 lb/mmBtu for combustion of diesel fuel with a sulfur content of 0.5 wt.%. Continued compliance is expected.

15A NCAC 02D .0521: Control of Visible Emissions

Subject sources are the oil filter lines (ESOL2 through ESOL5, ESOL7, ESOL8, and ESCART1), oil filter line (ESGL1), air filter lines (ESAL4, ESAL5, and ESAL6), and poly panel air cell lines (ESPCELL1, ESPCELL2, and ESPCELL3), paper dust collection system (ESOL5DC), and emergency engines (ES-FP1, ES-EG1 and ES-EG2).

Visible emissions from each emission source, except for ESOL3, are limited to 20% opacity. ESOL3 was installed in 1969 and is subject to the 40% opacity standard. The facility was previously found in violation of the opacity standards for a number of sources, and entered into SOC 2016-003. In order to achieve compliance with the visible emissions standards, the facility has completed installation of RTOs to control several sources, including ESOL2-a, ESOL3-a, ESOL4-a through d, ESOL5-a and b, ESOL7-a, and ESOL8-a. The facility completed source testing required by the SOC on ESOL7-a, with the RTO (ID No. CDOL7) installed and operating, and DAQ observers did not note any visible emissions from the source during the test. On April 30, 2018, the facility completed all requirements of the SOC, and DAQ issued a letter stating that the terms of the SOC were completed on May 04, 2018.

In a letter dated August 7, 2018, MANN+HUMMEL requested to lower the frequency of visible emissions monitoring from daily to monthly for controlled sources, and weekly for uncontrolled sources. DAQ concurs, and the permit will reflect a change to the monitoring frequency to have all subject sources monitored on a monthly basis. DAQ considers this to be an appropriate monitoring frequency given that the facility has conducted testing on controlled sources, and shown that the controls are effective at reducing visible emissions to the point that no visible emissions were noted during testing. Control devices are monitored continuously and are interlocked such that the controlled line is shut down if its associated RTO temperature drops below the minimum setpoint. Additionally, no visible emissions concerns have been noted in the past for the currently uncontrolled sources. Continued compliance is expected moving forward.

15A NCAC 02D .0524: New Source Performance Standards, Subpart III

Subject source is the fire pump engine (ID No. ES-FP1).

The fire pump is considered a new source under NSPS Subpart III, "Standards of Performance for Stationary Compression Ignition Internal Combustion Engines (CI ICE)." It was manufactured in July 2011, constructed in September 2011, is equipped with an exhaust filter, and meets the emission standards listed in 40 CFR 60.4205(c) for model year 2009+ fire pumps. There are no changes being made to this permit condition. Continued compliance is expected.

15A NCAC 02D .1100: Control of Toxic Air Pollutants

Applicable facility-wide. At DAQ’s request, the facility submitted updated modeling with the renewal application to include new emission factors. The modeling analysis was reviewed, but the facility submitted an application for a minor modification (Application No. 2600058.17D) which included a modeling analysis to account for a control device being added with that modification, and updated stack parameters for CDOL8. The permit currently contains a 15A NCAC 02D .1100 stipulation with emission limitations for formaldehyde, phenol, and methyl ethyl ketone (MEK); it does not contain a 15A NCAC 02Q .0711 toxics condition.

The following toxic air pollutants were evaluated and compared to their respective TPERs from 15A NCAC 2Q .0711(a):

Pollutant	Averaging Period	Facility-wide Emission Rate After Controls	TPER	Modeling Required?
Formaldehyde	lb/hr	0.34	0.04	YES
Phenol	lb/hr	2.79	0.24	YES
Methyl ethyl ketone (MEK)	lb/hr	0.06	22.4	No
	lb/day	1.4	78	No
Styrene	lb/day	0.03	3.9	No
Toluene	lb/hr	0.03	14.4	No
	lb/day	0.7	98	No
Xylene	lb/hr	0.09	16.4	No
	lb/day	2.2	57	No

Though the facility’s actual emissions of MEK fluctuate from year to year based on solvent usage, MEK emissions as reported in annual emission inventories have not exceeded the hourly TPER in the last 15 years of operation. A large contributor to MEK emissions was case bottom assembly, which used an MEK-containing adhesive. The facility switched to a more environmentally friendly adhesive, which greatly reduced the facility-wide MEK emissions. MEK emissions have been below the daily TPER since 2008, therefore, the MEK emission limits in the 15A NCAC 02D .1100 permit stipulation will be removed as requested by the facility.

For the modeling analysis, the facility used uncontrolled potential to emit for formaldehyde and phenol emission rates, and applied a multiplier of five to estimate emissions beyond the worst-case. In its response to DAQ’s questions regarding particulate emission from fuel and air filter lines discussed previously, the facility concluded that the phenol emissions from the lines will decrease, based on the bench scale analysis of the filter media for the air filter lines, and that the formaldehyde emission from heat setting operations on these lines will increase by roughly 36%. DAQ did not require the facility to submit further modeling, and the formaldehyde emission rates were adjusted accordingly; emission rates for phenol remain the same.

The emission rates used for the modeling analysis are as follows:

Emission Source ID	Originally Submitted Phenol Emission Rate lb/hr	Originally Submitted Formaldehyde Emission Rate lb/hr	Adjusted Formaldehyde Emission Rate lb/hr
ESOL2-a	4.04	4.63×10^{-1}	No Change
ESOL3-a	2.33	2.68×10^{-1}	No Change
ESOL4-a	1.16	1.35×10^{-1}	No Change
ESOL4-b	1.16	1.35×10^{-1}	No Change
ESOL4-c and d	2.33×10^{-2}	4.91×10^{-3}	No Change
ESOL5-a	1.16	1.35×10^{-1}	No Change
ESOL5-b	1.16	1.35×10^{-1}	No Change
ESOL7-a	4.04	4.63×10^{-1}	No Change
ESOL8-a	3.44	3.95×10^{-1}	No Change
ESCART1-a	1.09	1.24×10^{-1}	No Change
ESGL1-a	8.40×10^{-1}	9.59×10^{-2}	No Change
ESGL1-b	-	2.73×10^{-4}	No Change
ESGL1-c	-	5.46×10^{-4}	No Change
ESAL4-a	-	5.10×10^{-5}	No Change
ESAL4-b	1.10	1.27×10^{-1}	1.73×10^{-1}
ESAL4-c	-	2.55×10^{-4}	No Change
ESPCELL1-a	-	1.09×10^{-4}	No Change
ESPCELL1-b	1.39	1.59×10^{-1}	2.18×10^{-1}
ESPCELL2-a	-	9.10×10^{-5}	No Change
ESPCELL2-b	1.39	1.59×10^{-1}	2.18×10^{-1}
ESPCELL3-a	-	1.09×10^{-4}	No Change
ESPCELL3-b	1.39	1.60×10^{-1}	2.19×10^{-1}
ES-FP1	-	1.45×10^{-2}	No Change
ES-EG1	-	4.15×10^{-2}	No Change
ES-EG2	-	3.29×10^{-3}	No Change
IS-B1	-	7.28×10^{-4}	No Change
IS-COMB	-	8.52×10^{-4}	No Change
IS-WD	-	9.47×10^{-4}	No Change
IS-BO	-	1.31×10^{-4}	No Change

The emission rates above do not include formaldehyde emissions from IS-PPLT1. Though the facility claims there are no emissions from this activity, particulate, VOC, methanol, and formaldehyde emissions have been reported on past annual AQEI submittals, and there do not appear to have been any changes made to this source which would support an assertion that there are no emissions. Using the highest reported emission rate from the CY2014 AQEI, which was 0.91723 pounds over 5,600 hours of operation, and using the same methodology which was used by the facility to estimate emission rates from other sources, the anticipated emission rate from IS-PPLT1 would be approximately 8.18×10^{-4} pounds per hour of fugitive formaldehyde emissions, which would have a negligible effect on the overall modeled impact.

The originally submitted dispersion modeling was reviewed by Ms. Nancy Jones, DAQ AQAB, which resulted in the following impacts:

Pollutant	Original Emission Rate lb/hr	Concentration at Property Boundary $\mu\text{g}/\text{m}^3$	AAL $\mu\text{g}/\text{m}^3$	% AAL
Formaldehyde	3.03	75	150	50
Phenol	25.7	628	950	66

As a result of the bench scale analysis of filter media for the air filter lines, the emission rates of formaldehyde were increased for heat setting associated with these sources. The impacts above were scaled to account for the increase:

Pollutant	Adjusted Emission Rate lb/hr	Concentration at Property Boundary $\mu\text{g}/\text{m}^3$	AAL $\mu\text{g}/\text{m}^3$	% AAL
Formaldehyde	3.25	80.4	150	53.6

Since none of the toxic air pollutants emitted exceed either their respective TPER or subsequent AAL, DAQ has determined that there is not an unacceptable risk to human health resulting from activities at the facility. The emission limitations in the 02D .1100 stipulation will be updated to reflect the emission rates used in the modeling analysis.

As previously discussed, the modeling analysis did use emission rates from sources which are on the facility's insignificant activities list, and those sources are also required to comply with the emission rates used in the modeling analysis. The insignificant activities list has a note stating, "When applicable, emissions from stationary source activities identified above shall be included in determining compliance with the permit requirements for toxic air pollutants under 15A NCAC 02D .1100 'Control of Toxic Air Pollutants' or 02Q .0711 'Emission Rates Requiring a Permit.'"

Given the methodology used to estimate the emission rates used for the model, it is unlikely that the facility is physically capable of exceeding the emission limits at maximum process rates using the current bill of materials and operating parameters. The permit will reflect limits based on the modeled emission rates, including the adjusted emission rates for formaldehyde emissions, however the permit condition will exclude insignificant sources, and the facility's MACT 4Z-subject engines (ID Nos. ES-FP1, ES-EG1, and ES-EG2), per 15A NCAC 02Q .0702(a)(27)(B). Insignificant sources which were included in this analysis are marked in the insignificant activities table for identification purposes. Compliance is indicated.

15A NCAC 02D .1111: Maximum Achievable Control Technology, Subpart MMMM

Subject sources are the coating operations associated with the six oil filter lines (ID Nos. ESOL2 through ESOL5, ESOL7 and ESOL8).

MACT MMMM applies to labeling of the oil filters because this operation requires a coating to be applied to the metal housing and uses more than 250 gallons of paint each year. MACT MMMM does not apply for the air and fuel filter lines as no significant amount of coating is applied to metal during labeling or any other time.

The facility is considered an existing source under Subpart MMMM and has completed the initial notification and compliance demonstration required under this rule. MANN+HUMMEL uses “the emission rate without add-on controls” compliance option for the seven oil filter lines. Since their coatings fall within the general use category, the facility demonstrates compliance with the 2.6 lb HAP/gal solids emission limit on a monthly basis. MANN+HUMMEL uses supplier/manufacturer information and actual weight of material to calculate the HAP fraction of the coatings. The facility has consistently met all MACT requirements. Continued compliance is expected.

15A NCAC 02D .1111: Maximum Achievable Control Technology, Subpart ZZZZ

Subject sources are the emergency generators (ID Nos. ES-EG1 and ES-EG2), and the fire pump (ID No. ES-FP1).

The 96 hp diesel-fired emergency generator (ID No. ES-EG2) is an existing MACT affected source manufactured in 1993 which must follow operational limitations and work practices. The fire pump (ID No. ES-FP1) is a new MACT affected source which meets the requirements of this part by meeting the requirements of 40 CFR 60, Subpart IIII, for compression ignition engines in accordance with §63.6590(c). There are no changes being made to permit conditions for these sources. Continued compliance is expected.

Emergency generator (ID No. ES-EG1) is an existing emergency compression-ignition engine with a capacity greater than 500 hp, located at a major source of HAP, and is not contractually obligated to be available for more than 15 hours per calendar year for purposes specified in 40 CFR 63.6640(f)(2)(ii) and (iii). Therefore, per 40 CFR 63.6590(b)(3)(iii), the facility does not have to meet the requirements of 40 CFR 63, Subpart ZZZZ, or subpart A, including initial notification requirements. For this source, permit Section 2.1 C.4.a currently cites the 40 CFR 63.6590(b)(1)(i) requirements for new or reconstructed engines. Section 2.1 C.4.a. has been modified to include the following:

“Pursuant to 40 CFR 63.6590(b)(3)(iii), the Permittee does not have to meet the requirements of 40 CFR 63, Subpart ZZZZ, or subpart A, including initial notification requirements, for emergency generator (ID No. ES-EG1).”

Compliance is expected.

15A NCAC 02D .1111: Maximum Achievable Control Technology, Subpart DDDDD

The boiler (ID No. IS-B1) is subject to 40 CFR 63, Subpart DDDDD, "Industrial, Commercial, and Institutional Boilers and Process Heaters." The boiler falls into the "gas 1" fuels subcategory, and has a maximum heat input capacity less than 5 mmBtu/hr. As such, the facility is required to complete a tune-up every five years (not later than 61 months after the previous tune-up), as specified in §63.7540(a)(10)(i)-(vi). Additionally, it is not subject to the emission limits in Tables 1, 2, 11, 12, or 13 of the Subpart, nor is it subject to the operating limits in Table 4 of the Subpart. [§63.7540(e)]

The facility has already submitted the required initial notification, conducted the one-time energy assessment, and conducted the initial tune-up. The facility must submit periodic compliance reports, containing the applicable information enumerated in §63.7550(c), every five years, submitted no later than January 31, according to the requirements in §63.7550(b). The reports are required to be submitted via EPA's Compliance and Emissions Data Reporting Interface (CEDRI), which is now available for use, and can be accessed through EPA's Central Data Exchange (CDX). Continued compliance is expected.

15A NCAC 02D .1806: Control and Prohibition of Odorous Emissions

This regulation is applicable facility-wide, and requires the facility to operate in a manner which does not cause nor contribute to objectionable odors beyond the facility's property boundary. DAQ inspectors have not noted any odors when entering/existing the site. Continued compliance is expected.

15A NCAC 02Q .0317: Avoidance Condition for Prevention of Significant Deterioration

Facility-wide VOC emissions are limited to less than 250 tons per consecutive 12-month period to avoid being classified as a major source under PSD. The facility is required to calculate and record the facility-wide VOC emissions each month in an on-site log (written or electronic format) and determine VOC emissions by multiplying the total amount of each type of VOC-containing material consumed during the month by the VOC content of the material or DAQ approved site-specific emission factors. As part of SOC 2016-003, the facility was required to evaluate facility-wide VOC emissions due to increased VOC emission rates discovered during testing. The facility demonstrated compliance with the VOC emission limit on January 25, 2017, and fulfilled that milestone of the SOC. Continued compliance is expected.

15A NCAC 02Q .0501(b)(2): Permit Application Submittal Requirement

The facility submitted application No. 2600058.17A for the installation of eight recuperative thermal oxidizers (ID Nos. CDOL2, CDOL3, CDOL4-a, CDOL4-b, CDOL5-a, CDOL5-b, CDOL7, and CDOL8), which was the first step of a two-step significant modification. The facility is required to submit a Title V permit application within 12 months of the commencement of operation of the first thermal oxidizer in this group. The first RTO, CDOL7, was installed and began operation on October 17, 2017, therefore the facility must submit the required permit application no later than October 16, 2018.

Schedule of Compliance, SOC 2016-003

MANN+HUMMEL has fulfilled the requirements of SOC 2016-003 as of April 30, 2018, and the SOC is no longer active. DAQ issued a letter to the facility on May 4, 2018, acknowledging the facility's fulfillment of the SOC requirements. Moving forward, it is expected that the facility will be able to comply with the particulate emission limits of 15A NCAC 02D .0515, and the visible emissions requirements of 15A NCAC 02D .0521. Section 2.3 of the permit, which included the Schedule of Compliance, has been removed

8. Other Regulatory Requirements

- ✓ A Zoning Consistency Determination is NOT required for this permit application.
- ✓ The application was sealed by Jeff Twaddle, who is a registered Professional Engineer in the State of North Carolina (Seal #023231).
- ✓ The required \$929 application fee for permit modification was received.

9. Emissions Review

Pollutant	CY2016 Actual Emissions tons	Potential Before Controls / Limitations tons/yr	Potential After Controls / Limitations tons/yr
PM (TSP)	26.18	206	64
PM ₁₀	20.49	179	54
PM _{2.5}	20.49	171	51
SO ₂	0.01	1	1
NO _x	3.71	53	53
CO	3.03	37	37
VOC	118.2	557	<250
Highest Individual HAP (Phenol)	3.82	19.7	9.4
Total HAP	10.94	55	36

Actual emissions are from the CY2016 AQEI as submitted by the facility.

Potential emissions, before and after controls, are from permit application no. 2600058.17D submitted for minor modification after receipt of the application for renewal. Particulate, VOC, and HAP calculations resulting from the analysis of emissions from the air filter lines discussed in Section 7 were updated and included in the totals above. The facility has accepted a 250 ton per year limit on VOC emissions to avoid PSD permitting.

10. Source Testing Information

Several source tests have already been conducted on the oil filter lines in the past, which resulted in violations of the visible emission and particulate matter emission standards in the facility's permit, which prompted the SOC and subsequent installation of add-on controls. The most recent testing on the oil lines was conducted on June 21, 2018 on ESOL8-a. The results of this test are currently under review by the Stationary Sources Compliance Branch (SSCB), but preliminary indications are that the facility will be in compliance with the standard. A previous test conducted on ESOL7-a in November 2017, which was required by SOC 2016-003 demonstrated compliance.

The facility has also proposed testing on the fuel filter heat setting operation (ID No. ESGL1-a) to develop emission factors and demonstrate compliance with the 02D .0515 particulate ate emission standard. The testing is to be conducted within 120 days of permit issuance. If the test results do not demonstrate compliance, the FRO may require follow-on testing of the air filter lines to validate the assumptions made by the facility to develop the particulate emission factors used for these lines.

11. Statement of Compliance

Special Order by Consent (SOC) 2016-003 was issued on December 1, 2016 as a result of the facility's ongoing compliance issues. According to the SOC, the following violations have been observed, and facility has been issued the following NOV's and NREs:

- 09/03/14 NOV issued for violations of the visible emissions standards at ESOL3 and ESOL7.
- 05/06/15 NOV/NRE issued for violations of the visible emissions standards at ESOL7 and ESCART1.
- 07/28/15 Excess visible emissions from ESOL2 and ESOL3 were documented during source testing.
- 12/29/15 Excess visible emissions from ESOL2, ESOL4, and ESCART1 were observed during source testing of ESOL3.
- 02/18/16 Excess visible emissions noted from ESOL4 during inspection.
- 02/23/16 NOV/NRE issued for multiple violations, including the failed source test conducted on July 28-29, 2015, for total particulate and visible emissions from ESOL3.
- 04/25/16 NOV/NRE issued for failed source test conducted on December 29, 2015, for total particulate and visible emissions from ESOL3.

The facility's request to extend the SOC expiration date from December 30, 2017 to April 30, 2018 was granted by the DAQ on May 10, 2017. The deadline for each milestone was modified accordingly. On April 30, 2018, the facility completed all of the requirements of the SOC, and DAQ issued a letter to the facility on May 4, 2018, stating that the facility stating that the conditions of SOC 2016-003 were satisfied. The letter also stated that ESCART1 is no longer being operated. ESCART1 is still on site, and if restarted its emissions will have to be controlled by an RTO. The unit may need to be re-evaluated if it is used in a different capacity, which was indicated by the facility as a possibility.

Ms. Heather Carter, FRO DAQ, conducted a compliance inspection on April 19, 2017, and noted excessive visible emissions, which were being addressed at the time under SOC 2016-003. In addition to the known violations that were included in the SOC, Ms. Carter also noted that the facility was in violation of monitoring/recordkeeping requirements under 15A NCAC 02D .0521 for not monitoring visible emissions, and establishing "normal" for visible emissions from ESPCELL3. The facility was issued a NOV/NRE on May 23, 2017 for the violations noted during the April 19, 2017 inspection, and the facility submitted a response to FRO on June 7, 2017. A civil penalty in the amount of \$5,497 was assessed on December 7, 2017, and the penalty was paid on January 11, 2018. The violation has been resolved.

Ms. Carter conducted the latest compliance inspection on August 29, 2018. Ms. Carter noted that instances of excessive temperature monitor downtime for CDOL2 and CDOL7, and also noted a temperature excursion below the minimum required operating temperature for CDOL2. The FRO issued a Notice of Deficiency (NOD) on September 21, 2018 for the noted deficiencies, and a response from the facility is pending.

12. Public Notice Review

A notice of the DRAFT Title V Permit shall be made pursuant to 15A NCAC 02Q .0521. The notice will provide for a 30-day comment period, with an opportunity for a public hearing. Consistent with 15A NCAC 02Q .0525, the EPA will have a concurrent 45-day review period. Copies of the public notice shall be sent to persons on the Title V mailing list and EPA. Pursuant to 15A NCAC 02Q .0522, a copy of each permit application, each proposed permit and each final permit pursuant shall be provided to EPA.

The 30-day public notice period was from MONTH XX, 2018 through MONTH XX, 2018.

The EPA 45-day review period was from MONTH XX, 2018 through MONTH XX, 2018.

[Number of] comments were received during the public notice period and the EPA 45-day review.

13. Comments and Recommendations

The permit renewal with modification application for MANN+HUMMEL Purolator Filters, LLC located in Fayetteville, Cumberland County, NC has been reviewed by DAQ to determine compliance with all procedures and requirements. DAQ has determined that this facility is complying or will achieve compliance, as specified in the permit, with all requirements that are applicable to the affected sources. DAQ recommends the issuance of Air Permit No. 01757T26.